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TORRES, JOSEPH D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/880,707	Applicant(s) YELLIN ET AL.	
	Examiner Joseph D. Torres	Art Unit 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) *23-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☒ Claim(s) *1-22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, Claims 1-22, in Paper No. 11 is acknowledged.

Claims 23-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 11.

This application contains claims 23-28 drawn to an invention nonelected without traverse in Paper No. 11. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Objections

2. Claims 1-22 are objected to because of the following informalities:

- Claim 1 recites, "A method" in the preamble. CFR § 1.75 states that the specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention or discovery. A method does not indicated what subject matter the claims are directed to. Furthermore, embodiments of claim1 exist that the Applicant has failed to teach in the specification since not all codes are related to error correction. The

Examiner suggests the following: --A method for decoding channel-encoded data--.

- Claim 6 recites, "A method" in the preamble. CFR § 1.75 states that the specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention or discovery. A method does not indicated what subject matter the claims are directed to. Furthermore, embodiments of claim1 exist that the Applicant has failed to teach in the specification since not all codes are related to error correction. The Examiner suggests the following: --A method for decoding channel-encoded data--.
- Claim 9 recites, "An apparatus" in the preamble. CFR § 1.75 states that the specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention or discovery. A method does not indicated what subject matter the claims are directed to. Furthermore, embodiments of claim1 exist that the Applicant has failed to teach in the specification since not all codes are related to error correction. The Examiner suggests the following: --An apparatus for decoding channel-encoded data--.
- Claim 13 recites, "An apparatus" in the preamble. CFR § 1.75 states that the specification must conclude with a claim particularly pointing

out and distinctly claiming the subject matter, which the applicant regards as his invention or discovery. A method does not indicated what subject matter the claims are directed to. Furthermore, embodiments of claim1 exist that the Applicant has failed to teach in the specification since not all codes are related to error correction. The Examiner suggests the following: --An apparatus for decoding channel-encoded data--.

- Claim 16 recites, "An article comprising a computer-readable medium that stores computer-executable instruction for causing a computer system, in response to receiving a encoded data packet, to" in the preamble. CFR § 1.75 states that the specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention or discovery. A method does not indicated what subject matter the claims are directed to. Furthermore, embodiments of claim1 exist that the Applicant has failed to teach in the specification since not all codes are related to error correction. The Examiner suggests the following: --An article comprising a computer-readable medium that stores computer-executable instruction for causing a computer system, in response to receiving a channel encoded data packet, to--.
- Claim 19 recites, "An article comprising a computer-readable medium that stores computer-executable instruction for causing a computer

system to" in the preamble. CFR § 1.75 states that the specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention or discovery. A method does not indicated what subject matter the claims are directed to. Furthermore, embodiments of claim1 exist that the Applicant has failed to teach in the specification since not all codes are related to error correction. The Examiner suggests the following: --An article comprising a computer-readable medium that stores computer-executable instruction for causing a computer system, in response to receiving a channel encoded data packet, to--.

- Claims 8, 15 and 21 recite, "until predetermined criteria is satisfied" which should be corrected to: --until a predetermined criteria is satisfied--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 16-18 and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 16 is a single means claim. MPEP § 2164.08(a) states A single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph. In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor.).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2, 6-8, 10-12, 13-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the data packet" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "the symbols" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "the compressed symbols" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "the decoded symbols" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the decompressed first result" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the interleaved first result" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the compressed, interleaved first result" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the decoded first result" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the decompressed second result" in line 11. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "the received encoded symbols" in lines 4 and 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the table" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "the packet" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "the compressed symbols" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "the decoded symbols" in line 10. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitation "the decompressed first result" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitation "the interleaved first result" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitation "the compressed, interleaved first result" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitation "the decoded first result" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitation "the decompressed second result" in line 13. There is insufficient antecedent basis for this limitation in the claim.

Claim 16 recites the limitation "the packet" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "the compressed symbols" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "the decoded symbols" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "the decompressed first result" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "the interleaved first result" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "the compressed, interleaved first result" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "the decoded first result" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "the decompressed second result" in line 12. There is insufficient antecedent basis for this limitation in the claim.

The claims are generally narrative and indefinite, failing to conform with current practice. They are replete with grammatical and idiomatic errors. The claims need to be revised to remove all grammatical errors as well as 112 issues some of which the Examiner has pointed out.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 3-5, 9, 10, 12, 16, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Stralen; Nick Andrew et al. (US 6516437 B1, hereafter referred to as Van Stralen) in view of Ross; John Anderson Fergus (US 5983384 A).

35 U.S.C. 103(a) rejection of claims 1 and 3.

Van Stralen teaches receiving encoded data (Figure 1 is a device for receiving turbo encoded data); and decoding the data using a look-up table that stores information approximating output (col. 8, lines 1-11 and col. 10, lines 47-57 in Van Stralen teach Multiplexers 134 and 136 are used to select channel transition probabilities from Look-up Tables 130 and 132; channel transition probabilities R(-|-) are used for approximating output APPt(k) from equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen, hence the channel transition probabilities R(-|-) are substantially stored information approximating output via equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen) of an algorithmic decoding process (see Abstract in Van Stralen; Note a MAP decoding Algorithm is an algorithmic decoding process).

However Van Stralen does not explicitly teach the specific use of packets.

Ross, in an analogous art, teaches turbo coding in a packet protocol environment. One of ordinary skill in the art at the time the invention was made would have been highly motivated to use the Turbo decoder in the Van Stralen patent in an environment for

which it was designed and Ross teaches an environment for which turbo decoders are used and designed to be use in.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Van Stralen with the teachings of Ross by implementing the decoder in the Van Stralen patent in a packet protocol environment. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that implementing the decoder in the Van Stralen patent in a packet protocol environment would have provided the opportunity to use the Turbo decoder in the Van Stralen patent in an environment for which it was designed.

35 U.S.C. 103(a) rejection of claim 4.

Col. 1, lines 8-10 in Van Stralen teach using a parallel concatenated turbo decoder.

35 U.S.C. 103(a) rejection of claim 5.

The decoding algorithm in Van Stralen is either a soft-input soft-output algorithmic decoding process, a soft-input hard-output algorithmic decoding process, a hard-input soft-output algorithmic decoding process, or a hard-input hard-output algorithmic decoding process.

35 U.S.C. 103(a) rejection of claim 9.

Van Stralen teaches a memory storing a look-up table with information approximating output of an algorithmic decoding process (col. 8, lines 1-11 and col. 10, lines 47-57 in Van Stralen teach Multiplexers 134 and 136 are used to select channel transition probabilities from Look-up Tables 130 and 132; channel transition probabilities R(-|-) are used for approximating output APPt(k) from equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen, hence the channel transition probabilities R(-|-) are substantially stored information approximating output via equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen); and a processor configured to use the look-up table to decode data packets encoded by convolutional coding (A Map decoder such a the one in Figure 1 of Van Stralen is a processor configured to use the look-up table to decode data encoded by convolutional coding). However Van Stralen does not explicitly teach the specific use of packets.

Ross, in an analogous art, teaches turbo coding in a packet protocol environment. One of ordinary skill in the art at the time the invention was made would have been highly motivated to use the Turbo decoder in the Van Stralen patent in an environment for which it was designed and Ross teaches an environment for which turbo decoders are used and designed to be use in.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Van Stralen with the teachings of Ross by implementing the decoder in the Van Stralen patent in a packet protocol environment. This modification would have been obvious to one of ordinary skill in the art, at the time the

invention was made, because one of ordinary skill in the art would have recognized that implementing the decoder in the Van Stralen patent in a packet protocol environment would have provided the opportunity to use the Turbo decoder in the Van Stralen patent in an environment for which it was designed.

35 U.S.C. 103(a) rejection of claim 10.

The decoding algorithm in Van Stralen is either a soft-input soft-output algorithmic decoding process, a soft-input hard-output algorithmic decoding process, a hard-input soft-output algorithmic decoding process, or a hard-input hard-output algorithmic decoding process.

35 U.S.C. 103(a) rejection of claim 12.

See Title in Van Stralen.

35 U.S.C. 103(a) rejection of claims 16 and 18.

Van Stralen teaches a memory storing a look-up table with information approximating output of an algorithmic decoding process (col. 8, lines 1-11 and col. 10, lines 47-57 in Van Stralen teach Multiplexers 134 and 136 are used to select channel transition probabilities from Look-up Tables 130 and 132; channel transition probabilities R(-|-) are used for approximating output APPt(k) from equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen, hence the channel transition probabilities R(-|-)

are substantially stored information approximating output via equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen); and a processor configured to use the look-up table to decode data packets encoded by convolutional coding (A Map decoder such a the one in Figure 1 of Van Stralen is a processor configured to use the look-up table to decode data encoded by convolutional coding). However Van Stralen does not explicitly teach the specific use of packets or computer coded instructions for implementing the turbo decoder.

Ross, in an analogous art, teaches turbo coding in a packet protocol environment. One of ordinary skill in the art at the time the invention was made would have been highly motivated to use the Turbo decoder in the Van Stralen patent in an environment for which it was designed and Ross teaches an environment for which turbo decoders are used and designed to be use in. In addition, one of ordinary skill in the art at the time the invention was made would have known that software solutions are a cost effective means for adding a degree of flexibility and scalability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Van Stralen with the teachings of Ross by implementing the decoder in the Van Stralen patent in a packet protocol environment. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that implementing the decoder in the Van Stralen patent in a packet protocol environment would have provided the opportunity to use the Turbo decoder in the Van Stralen patent in an environment for which it was designed.

35 U.S.C. 103(a) rejection of claim 22.

The decoding algorithm in Van Stralen is either a soft-input soft-output algorithmic decoding process, a soft-input hard-output algorithmic decoding process, a hard-input soft-output algorithmic decoding process, or a hard-input hard-output algorithmic decoding process.

6. Claims 2, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Stralen; Nick Andrew et al. (US 6516437 B1, hereafter referred to as Van Stralen) and Ross; John Anderson Fergus (US 5983384 A) in view of Arean; Ramon et al. (US 6253185 B1, hereafter referred to as Arean).

35 U.S.C. 103(a) rejection of claims 2, 11 and 17.

Van Stralen and Ross substantially teaches the claimed invention described in claims 1, 3-5, 9, 10, 12, 16 (as rejected above).

However Van Stralen and Ross do not explicitly teach the specific use of joint quantization.

Arean, in an analogous art, teaches joint quantization (col. 4, lines 43-67in Arean teach a quantizer for simultaneously quantizing r values at a time). One of ordinary skill in the art at the time the invention was made would have been highly motivated to use the Quantizer in Arean since in modern communication systems data can be transmitted in parallel channels and processing data in parallel speeds up processing.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Van Stralen and Ross with the teachings of Arean by including use of joint quantization. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of joint quantization would have provided the opportunity to speed up processing.

35 U.S.C. 103(a) rejection of claim 9.

7. Claims 6, 13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Stralen; Nick Andrew et al. (US 6516437 B1, hereafter referred to as Van Stralen) in view of Maru; Tsuguo (US 6516444 B1).

35 U.S.C. 103(a) rejection of claim 6.

Van Stralen teaches receiving encoded symbols (col. 8, lines 1-11 in Van Stralen teach that a quantizer receives encoded symbols); compressing the symbols (col. 8, lines 1-11 in Van Stralen teach that a quantizer receives an analog signal and compresses an analog value for a symbol into a discrete number of quantized values Y^r_t); decoding the compressed symbols using a first look-up table that stores information approximating output (col. 8, lines 1-11 and col. 10, lines 47-57 in Van Stralen teach Multiplexers 134 and 136 are used to select channel transition probabilities from Look-up Tables 130 and 132; channel transition probabilities R(-|-) are used for approximating output APPt(k)

from equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen, hence the channel transition probabilities R(-|-) are substantially stored information approximating output via equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen) of an algorithmic decoding process (see Abstract in Van Stralen; Note a MAP decoding Algorithm is an algorithmic decoding process); and arithmetically combining the compressed symbols with the decoded symbols to obtain a first result (APPt(k) in equation 12 in col. 6 is a first result that is derived from combining quantized input Y^{s}_{t} with previous decoded values APPt(k) via equations 12 in col. 6, 8 in col.2 and 11 in col. 3).

However Van Stralen does not explicitly teach the specific use of decompressing the first result.

Maru, in an analogous art, teaches a Hard Decision unit 916 in Figure 9 of Maru, which is a unit for decompressing quantized soft values into a final hard decision. One of ordinary skill in the art at the time the invention was made would have been motivated to use the Hard Decision unit 916 in order to reproduce the received digital data. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Van Stralen with the teachings of Maru by including an additional step of decompressing the first result. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that decompressing the first result would have provided the opportunity to reproduce the received digital data.

35 U.S.C. 103(a) rejection of claim 13.

Van Stralen teaches memory storing a first look-up table with information approximating output of an algorithmic decoding process (col. 8, lines 1-11 and col. 10, lines 47-57 in Van Stralen teach Multiplexers 134 and 136 are used to select channel transition probabilities from Look-up Tables 130 and 132; channel transition probabilities R(-|-) are used for approximating output APPt(k) from equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen, hence the channel transition probabilities R(-|-) are substantially stored information approximating output via equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen; hence Look-up Tables 130 and 132 are memory storing a first look-up table with information approximating output of an algorithmic decoding process); and a processor configured to compress a packet of received encoded symbols (col. 8, lines 1-11 in Van Stralen teach that a quantizer receives an analog signal and compresses an analog value for a symbol into a discrete number of quantized values Y^{τ}_{t}); decode the compressed symbols using the first look-up table (col. 8, lines 1-11 and col. 10, lines 47-57 in Van Stralen teach Multiplexers 134 and 136 are used to select channel transition probabilities from Look-up Tables 130 and 132; channel transition probabilities R(-|-) are used for approximating output APPt(k) from equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen, hence the channel transition probabilities R(-|-) are substantially stored information approximating output via equation 14 in col. 6,

equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen) of an algorithmic decoding process (see Abstract in Van Stralen; Note a MAP decoding Algorithm is an algorithmic decoding process); and arithmetically combine the compressed symbols with the decoded symbols to obtain a first result (APPt(k) in equation 12 in col. 6 is a first result that is derived from combining quantized input Y^{τ}_{t} with previous decoded values APPt(k) via equations 12 in col. 6, 8 in col.2 and 11 in col. 3).

However Van Stralen does not explicitly teach the specific use of decompressing the first result.

Maru, in an analogous art, teaches a Hard Decision unit 916 in Figure 9 of Maru, which is a unit for decompressing quantized soft values into a final hard decision. One of ordinary skill in the art at the time the invention was made would have been motivated to use the Hard Decision unit 916 in order to reproduce the received digital data. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Van Stralen with the teachings of Maru by including an additional step of decompressing the first result. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that decompressing the first result would have provided the opportunity to reproduce the received digital data.

35 U.S.C. 103(a) rejection of claim 19.

Van Stralen teaches memory storing a first look-up table with information approximating output of an algorithmic decoding process (col. 8, lines 1-11 and col. 10, lines 47-57 in

Van Stralen teach Multiplexers 134 and 136 are used to select channel transition probabilities from Look-up Tables 130 and 132; channel transition probabilities R(-|-) are used for approximating output APPt(k) from equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen, hence the channel transition probabilities R(-|-) are substantially stored information approximating output via equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen; hence Look-up Tables 130 and 132 are memory storing a first look-up table with information approximating output of an algorithmic decoding process); and a processor configured to compress a packet of received encoded symbols (col. 8, lines 1-11 in Van Stralen teach that a quantizer receives an analog signal and compresses an analog value for a symbol into a discrete number of quantized values Y^{r}_{t}); decode the compressed symbols using the first look-up table (col. 8, lines 1-11 and col. 10, lines 47-57 in Van Stralen teach Multiplexers 134 and 136 are used to select channel transition probabilities from Look-up Tables 130 and 132; channel transition probabilities R(-|-) are used for approximating output APPt(k) from equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen, hence the channel transition probabilities R(-|-) are substantially stored information approximating output via equation 14 in col. 6, equations 1-8 in col. 2 and equation 12 in col. 4 in Van Stralen) of an algorithmic decoding process (see Abstract in Van Stralen; Note a MAP decoding Algorithm is an algorithmic decoding process); and arithmetically combine the compressed symbols

with the decoded symbols to obtain a first result (APPt(k) in equation 12 in col. 6 is a first result that is derived from combining quantized input Y^{r}_{t} with previous decoded values APPt(k) via equations 12 in col. 6, 8 in col.2 and 11 in col. 3).

However Van Stralen does not explicitly teach the specific use of decompressing the first result or computer coded instructions for implementing the turbo decoder.

Maru, in an analogous art, teaches a Hard Decision unit 916 in Figure 9 of Maru, which is a unit for decompressing quantized soft values into a final hard decision. One of ordinary skill in the art at the time the invention was made would have been motivated to use the Hard Decision unit 916 in order to reproduce the received digital data. In addition, one of ordinary skill in the art at the time the invention was made would have known that software solutions are a cost effective means for adding a degree of flexibility and scalability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Van Stralen with the teachings of Maru by including an additional step of decompressing the first result. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that decompressing the first result would have provided the opportunity to reproduce the received digital data.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wolf; Tod D. (US 6725409 B1) teaches) Digital Signal Processor

(DSP) Cores and more specifically to a DSP Instruction for Turbo Decoding. Ross; John Anderson Fergus et al. (US 6393072 B1) teaches communication systems in which the data is encoded. Gerard J. M. Smit, Paul M. Heysters, Paul J. M. Havinga, Lodewijk T. Smit, Jaap Smit, and John Dilessen, Mapping the SISO module of the turbo decoder to a FPFA, In Proceedings of Second international symposium on Mobile Multimedia Systems & Applications *(MMSA2000)*, pages 165-172, November 2000. ISBN 90-9014360-2. Engling Yeo, Payam Pakzad, Borivoje Nikolic and Venkat Anantharam, VLSI Architectures for Iterative Decoders in Magnetic Recording Channels, IEEE TRANSACTIONS ON MAGNETICS, VOL. 37, NO. 2, MARCH 2001.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (703) 308-7066. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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